

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Currently Amended). An image read-out method of obtaining an image signal bearing thereon image information by use of a stimuable phosphor sheet having a layer of stimuable phosphor which emits stimulated emission in proportion to the stored energy of radiation upon exposure to stimulating light and a solid image sensor having a photoconductive material layer which exhibits electric conductivity upon exposure to the stimulated emission from the stimuable phosphor sheet and by scanning with stimulating light a stimuable phosphor sheet which has been exposed to radiation and has stored thereon an image, causing the photoconductive material layer to be exposed to stimulated emission emitted from the stimuable phosphor sheet upon exposure to the stimulating light, and detecting electric charges generated in the photoconductive material layer upon exposure to the stimulated emission by applying an electric field to the photoconductive material layer, wherein the improvement comprises that

said stimuable phosphor sheet has a layer of stimuable phosphor which is stimulated by stimulating light in a wavelength range of not shorter than 600nm and emits stimulated emission in a wavelength range of not longer than 500nm,

said solid image sensor has a photoconductive material layer whose major component is a-Se, and

said electric field is such as to generate an avalanche amplification effect in the photoconductive material layer,

further comprising an array of spaced apart electrodes disposed in a first direction and a second direction perpendicular to the first direction,

wherein the electrodes disposed in the first direction are separated by a pixel element pitch, so that each electrode in the first direction is in a one-to-one correspondence with a picture element.

Claim 2 (Original). An image read-out method as defined in Claim 1 in which said photoconductive material layer of the solid image sensor is not smaller than $1\mu\text{m}$ and not larger than $100\mu\text{m}$ in thickness.

Claim 3 (Original). An image read-out method as defined in Claim 2 in which said photoconductive material layer of the solid image sensor is not smaller than $10\mu\text{m}$ and not larger than $50\mu\text{m}$ in thickness.

Claim 4 (Original). An image read-out method as defined in Claim 1 in which fluctuation of the image signal due to fluctuation in the electric field applied to the photoconductive material layer is suppressed.

Claim 5 (Currently Amended). An image read-out system comprising
a stimulating light source which emits stimulating light in a wavelength range of not shorter than 600nm ,

a stimulating light scanning means which causes the stimulating light emitted from the stimulating light source to scan a stimuable phosphor sheet having a layer of stimuable phosphor which emits stimulated emission in a wavelength range of not longer than 500nm in proportion to the stored energy of radiation upon exposure to the stimulating light,

a solid image sensor having a photoconductive material layer the major component of

which is a-Se and which exhibits electric conductivity upon exposure to the stimulated emission from the stimuable phosphor sheet,

an electric voltage imparting means which imparts an electric voltage to the photoconductive material layer of the solid image sensor to apply such an electric field as to generate an avalanche amplification effect in the photoconductive material layer, and

an image signal obtaining means which detects electric charges generated in the photoconductive material layer of the solid image sensor when the stimuable phosphor sheet is exposed to the stimulating light and stimulated emission emitted from the stimuable phosphor sheet impinges upon the photoconductive material with an electric voltage imparted to the photoconductive material layer by the electric voltage imparting means to apply said electric field as to generate said avalanche amplification effect in the photoconductive material layer, and detects an image signal representing an image stored on the stimuable phosphor sheet,

further comprising an array of spaced apart electrodes disposed in a first direction and a second direction perpendicular to the first direction,

wherein the electrodes disposed in the first direction are separated by a pixel element pitch, so that each electrode in the first direction is in a one-to-one correspondence with a picture element.

Claim 6 (Original). An image read-out system as defined in Claim 5 in which said photoconductive material layer of the solid image sensor is not smaller than $1\mu\text{m}$ and not larger than $100\mu\text{m}$ in thickness.

Claim 7 (Original). An image read-out system as defined in Claim 6 in which said photoconductive material layer of the solid image sensor is not smaller than $10\mu\text{m}$ and not larger than $50\mu\text{m}$ in thickness.

Claim 8 (Original). An image read-out system as defined in Claim 5 further comprising a fluctuation suppressing means which suppresses fluctuation of the image signal due to fluctuation in the electric field applied to the photoconductive material layer.

Claims 9-30 (cancelled).

Claim 31 (Currently Amended). An image read-out method of obtaining an image signal bearing thereon image information by use of a stimuable phosphor sheet having a layer on the stimuable phosphor which emits stimulated emission in proportion to the stored energy of radiation upon exposure to stimulating light and a solid image sensor having a photoconductive material layer which exhibits electric conductivity upon exposure to stimulated emission from the stimuable phosphor sheet and by scanning with stimulating light a stimuable phosphor sheet which has been exposed to radiation and has stored thereon an image, causing the photoconductive material layer to be exposed to stimulated emission emitted from the stimuable phosphor sheet upon exposure to stimulating light, and detecting electric charges generated in the photoconductive material layer upon exposure to the stimulated emission by applying an electric field to the photoconductive material layer, wherein the improvement comprises the steps of

using a solid image sensor whose photoconductive material layer also exhibits electric conductivity upon exposure to recording light bearing thereon image information or momentary light emitted from the stimuable phosphor layer upon exposure to the recording light,

projecting the recording light onto the stimuable phosphor sheet while applying an electric field to the photoconductive material layer, and

detecting charges generated in the photoconductive material layer when the recording light or the momentary light impinges upon the photoconductive material layer, thereby obtaining a preliminary read-out image signal bearing thereon image information,

in which a solid image sensor in which a pair of electrode layers are provided on opposite sides of the photoconductive material layer and the electrode of one of the electrode layers is divided into a stripe electrode comprising a plurality of line electrode elements arranged in a row to be used,

electric charges generated in the photoconductive material layer when the recording light or the momentary light impinges upon the photoconductive material layers are detected by line electrode elements of said one electrode layer,

in which a solid image sensor in which the electrode of the other electrode layer is also divided into a stripe electrode comprising a plurality of line electrode elements arranged in a row, each extending to intersect the line electrode elements of said one electrode layer is used,
and

electric charges generated in the photoconductive material layer when the recording light or the momentary light impinges upon the photoconductive material layer is detected also by line electrode elements of said the other electrode layer.

Claims 32-33. (Cancelled).

Claim 34 (Currently Amended). An image read-out system comprising
a stimulating light source which emits stimulating light,

a stimulating light scanning means which causes the stimulating light emitted from the stimulating light source to scan a stimuable phosphor sheet having a layer of stimuable phosphor which emits stimulated emission in proportion to the stored energy of radiation upon exposure to the stimulating light,

a solid image sensor having a photoconductive material layer which exhibits electric conductivity upon exposure to the stimulated emission from the stimuable phosphor sheet,

an electric voltage imparting means which imparts an electric voltage to the photoconductive material layer of the solid image sensor to apply an electric field to the photoconductive material layer, and

an image signal obtaining means which detects electric charges generated in the photoconductive material layer of the solid image sensor when the stimuable phosphor sheet is exposed to the stimulating light and stimulated emission emitted from the stimuable phosphor sheet impinges upon the photoconductive material with an electric field applied to the photoconductive material layer, and detects an image signal representing an image stored on the stimuable phosphor sheet, wherein the improvement comprises that

the photoconductive material layer of the solid image sensor also exhibits electric conductivity upon exposure to recording light bearing thereon image information or momentary light emitted from the stimuable phosphor layer upon exposure to the recording light, and

there is provided a preliminary read-out image signal obtaining means which obtains a preliminary read-out image signal bearing thereon image information by detecting charges generated in the photoconductive material layer when the recording light or the momentary light impinges upon the photoconductive material layer,

in which the solid image sensor is provided with a pair of electrode layers on opposite sides of the photoconductive material layer, each having an electrode,

the electrode of one of the electrode layers is divided into a stripe electrode comprising a plurality of line electrode elements arranged in a row,

the preliminary read-out image signal obtaining means detects electric charges generated in the photoconductive material layer when the recording light or the momentary light impinges upon the photoconductive material layer by line electrode elements of said electrode layer,

in which the electrode of the other electrode layer is also divided into a stripe electrode comprising a plurality of line electrode elements arranged in a row, each extending to intersect the line electrode elements of said one electrode layer, and

the preliminary read-out image signal obtaining means detects electric charges generated in the photoconductive material layer when the recording light or the momentary light impinges upon the photoconductive material layer be detected also by line electrode elements of said the other electrode layer.

Claims 35-58 (cancelled).

Claim 59 (Currently Amended). The image read-out system of claim 8 wherein the fluctuation suppressing means corrects the image signal according to the fluctuations of a voltage power source during read-out of the image signal, said voltage power source generating said electric field.

Claims 60-61. (Cancelled).

Claim 62 (Currently Amended). An image read-out method of obtaining an image signal bearing thereon image information by use of a stimuable phosphor sheet having a layer of

stimulable phosphor which emits stimulated emission in proportion to the stored energy of radiation upon exposure to stimulating light and a solid image sensor having a photoconductive material layer which exhibits electric conductivity upon exposure to the stimulated emission from the stimulable phosphor sheet and by scanning with stimulating light a stimulable phosphor sheet which has been exposed to radiation and has stored thereon an image, causing the photoconductive material layer to be exposed to stimulated emission emitted from the stimulable phosphor sheet upon exposure to the stimulating light, and detecting electric charges generated in the photoconductive material layer upon exposure to the stimulated emission by applying an electric field to the photoconductive material layer, wherein the improvement comprises that

said stimulable phosphor sheet has a layer of stimulable phosphor which is stimulated by stimulating light in a wavelength range of not shorter than 600nm and emits stimulated emission in a wavelength range of not longer than 500nm,

said solid image sensor has a photoconductive material layer whose major component is a-Se,

wherein said electric field generates an avalanche amplification effect in the photoconductive material layer, and detecting electrical charges generated in the photoconductive material layer occurs simultaneously with the avalanche effect,

further comprising an array of spaced apart electrodes disposed in a first direction and a second direction perpendicular to the first direction,

wherein the electrodes disposed in the first direction are separated by a pixel element pitch, so that each electrode in the first direction is in a one-to-one correspondence with a picture element.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/534,203

Claim 63 (Previously presented). An image readout method as defined Claim 31,
wherein:

said stimuable phosphor sheet has a layer of stimuable phosphor which is stimulated by
stimulating light in a wavelength range of not shorter than 600nm and emits stimulated emission
in a wavelength range of not longer than 500nm,

said solid image sensor has a photoconductive material layer whose major component is
a-Se,

wherein said electric field generates an avalanche amplification effect in the
photoconductive material layer, and detecting electrical charges generated in the
photoconductive material layer occurs simultaneously with the avalanche effect.